CHAPTER 2

Hardware Installation

This chapter provides procedures for installing a LightStream 2020 multiservice ATM switch (LS2020 switch) in a networking environment. Installing an LS2020 switch involves several tasks in two major categories:

1 Installing the LS2020 switch hardware

Separate sections in this chapter are devoted to the following topics:

— "Unpacking and Inspecting the LS2020 Switch Hardware"

— "Installing an LS2020 Switch in Rack"

— "Wiring a DC-Powered System"

— "Installing Fantails"

— "Attaching Data Cables"

— "Closing the Chassis"

— "Applying System Power"

2 Performing basic configuration procedures

The basic configuration tasks for the LS2020 switch are accomplished through configuration scripts provided in this chapter.

Note Refer to the *LightStream 2020 Release Notes* for important, release-specific information that may not appear elsewhere in the LS2020 documentation set.

Unpacking and Inspecting the LS2020 Switch Hardware

When unpacking the LightStream 2020 switch, you should inspect the shipping container contents to ensure the shipment is complete as well as check for damage that may have occurred during shipment.

Step 1 Check the shipping container before removing the LS2020 switch hardware from the loading dock and inspect it for any signs of in-transit damage.

Step 2 Transport the container to the systems area where the LS2020 switch is to be installed.

Step 3 Cut the packing straps and lift the cardboard box off the LS2020 chassis. Remove the packing material and bill of materials.

Step 4 Check the bill of materials against the shipment received.

Step 5 Inspect all external surfaces of the chassis for signs of damage. Pay special attention to areas of the chassis corresponding to visible damage to the shipping container.

Step 6 Document any damage noted during the inspection.

Step 7 Contact your LS2020 vendor if your LS2020 switch has been damaged during shipment.

Installing an LS2020 Switch in Rack

This section explains how to mount an LS2020 chassis in an equipment rack.

Note For physical stability, when an LS2020 chassis is installed in a rack, the equipment configuration should comply with UL Standard 1950, Par. 4.1.1, and IEC 950, 4.1.1.

Cooling Air and Hardware Placement

An LS2020 chassis takes in cooling air at the bottom of the front panel and exhausts it at the top rear and right side of the chassis. (The air vents on the right side of the chassis can safely be covered by the rack side panels, but they should not otherwise be blocked.) To minimize the potential for thermal problems, position the LS2020 chassis so that

- The air intake panel is *not* located near the exhaust of other equipment.
- The exhaust is *not* located near the air intake of other equipment.

Required Tools

Ensure that you have the following items on hand before you begin installing the LS2020 switch:

- A number 2 Phillips screwdriver for mounting the chassis.
- A 5/16-inch slotted-tip screwdriver for removing blowers, power supplies, and boards from the chassis.
- An ESD wrist strap for grounding yourself to the chassis.
- Antistatic shielding bags or antistatic mats for protecting components removed from the chassis.
- Appropriate material-handling equipment for lifting the LS2020 switch into the rack.
- For AC-powered systems: an LS2020 Country Power Kit, which includes a power cord and mounting hardware for the chassis.
- For DC-powered systems: a DC Mounting Kit, which contains mounting hardware for the chassis, plus equipment needed by the electrician for wiring the system (see the subsection entitled “Preparation for Wiring” later in this chapter).

Rack Installation Procedure

To mount the LS2020 switch in an equipment rack, perform the following steps:

Step 1 Ensure that the power cord to the system is **disconnected** before you begin with the installation.

Step 2 Put on the ESD wrist strap and connect it to a grounding jack on the front or the rear panel of the LS2020 chassis.

Step 3 Remove the following chassis components to reduce the weight of the system during installation.

- Blowers (top front and top rear)
- Power supplies (right rear)

These components are located behind removable covers. Figure 2-1 shows the front view of the LS2020 chassis, while Figure 2-2 shows the rear view of the chassis.

If your system is fully configured with function cards, you may also remove some or all of these cards to further reduce the weight of the chassis. (Refer to the *LightStream 2020 Hardware Reference and Troubleshooting Guide* for component removal instructions.) Put all removed electronic components in antistatic shielding bags or place them on antistatic mats.

Note Do *not* remove disk assemblies as a means of reducing chassis weight.

Step 4 Determine the desired mounting position in the rack for the LS2020 switch. Attach the clip nuts from the country kit or the rack mounting kit to the appropriate positions on the rack rails.

See Figure 2-1 for the location of mounting screw slots. (If your rack has metric-threaded or non-standard rails, you may need to provide your own mounting hardware.)

Step 5 Lift the LS2020 chassis into the desired mounting position in the rack.

Warning An LS2020 chassis is heavy, particularly if it is completely configured with function cards. (The weight of the system ranges from 94 to 147 pounds, depending on the system configuration.) Do not risk personal injury or equipment damage by attempting to transport or lift the system without assistance.

Caution Do *not* use the disk assembly handles to lift the chassis. These handles, shown in Figure 2-1, are *not* designed for weight-bearing loads and may break off if used to lift the chassis.

Step 6 Using the mounting screws and washers included in your country kit or rack mounting kit, secure the flanges on the front of the LS2020 chassis to the rack.

Step 7 Replace any items that you removed from the chassis in Step 3 above (blowers, power supplies, function cards, and covers) before installing the chassis into the rack.

Figure 2-1 Front View of LightStream 2020 Chassis

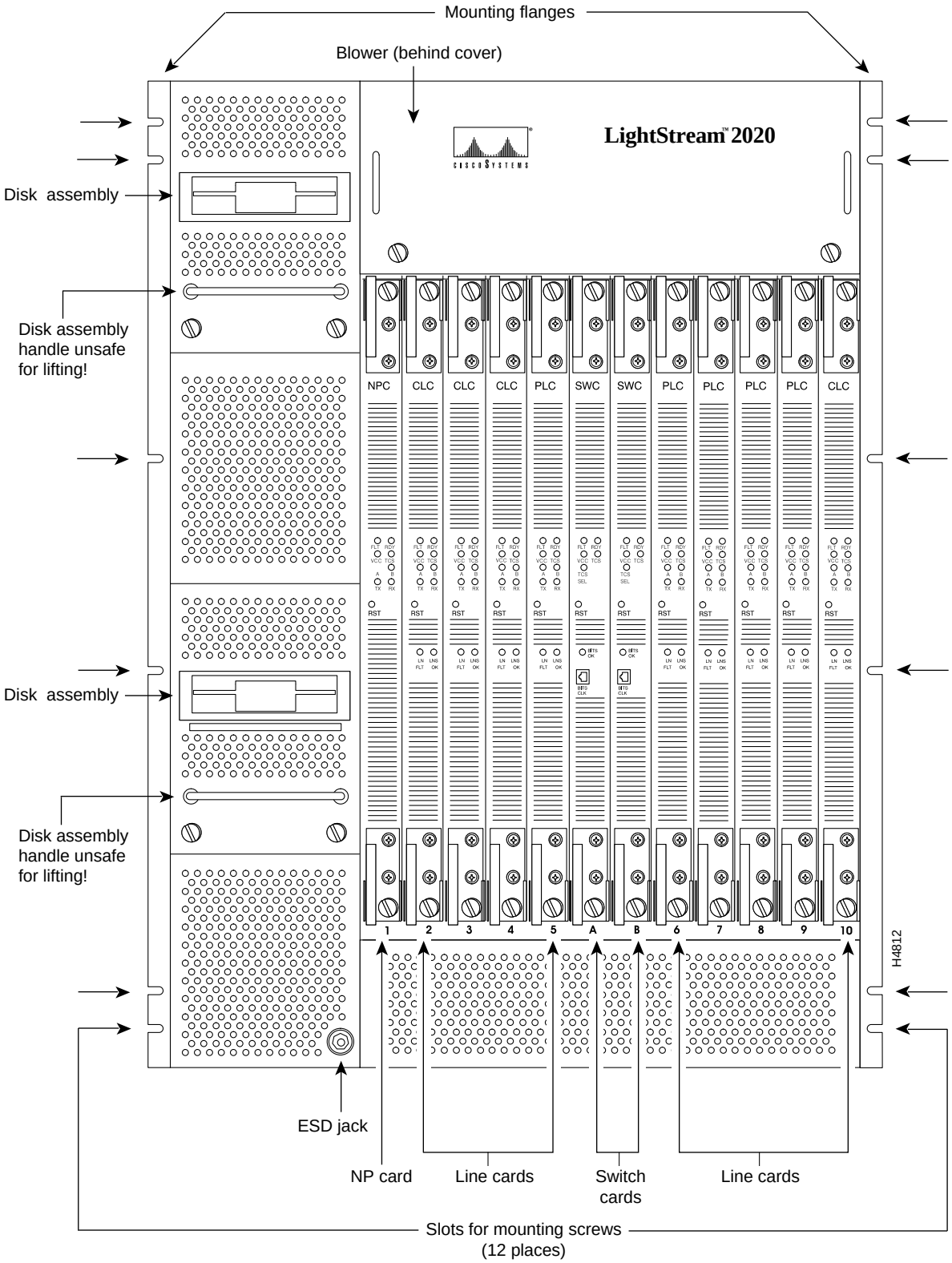
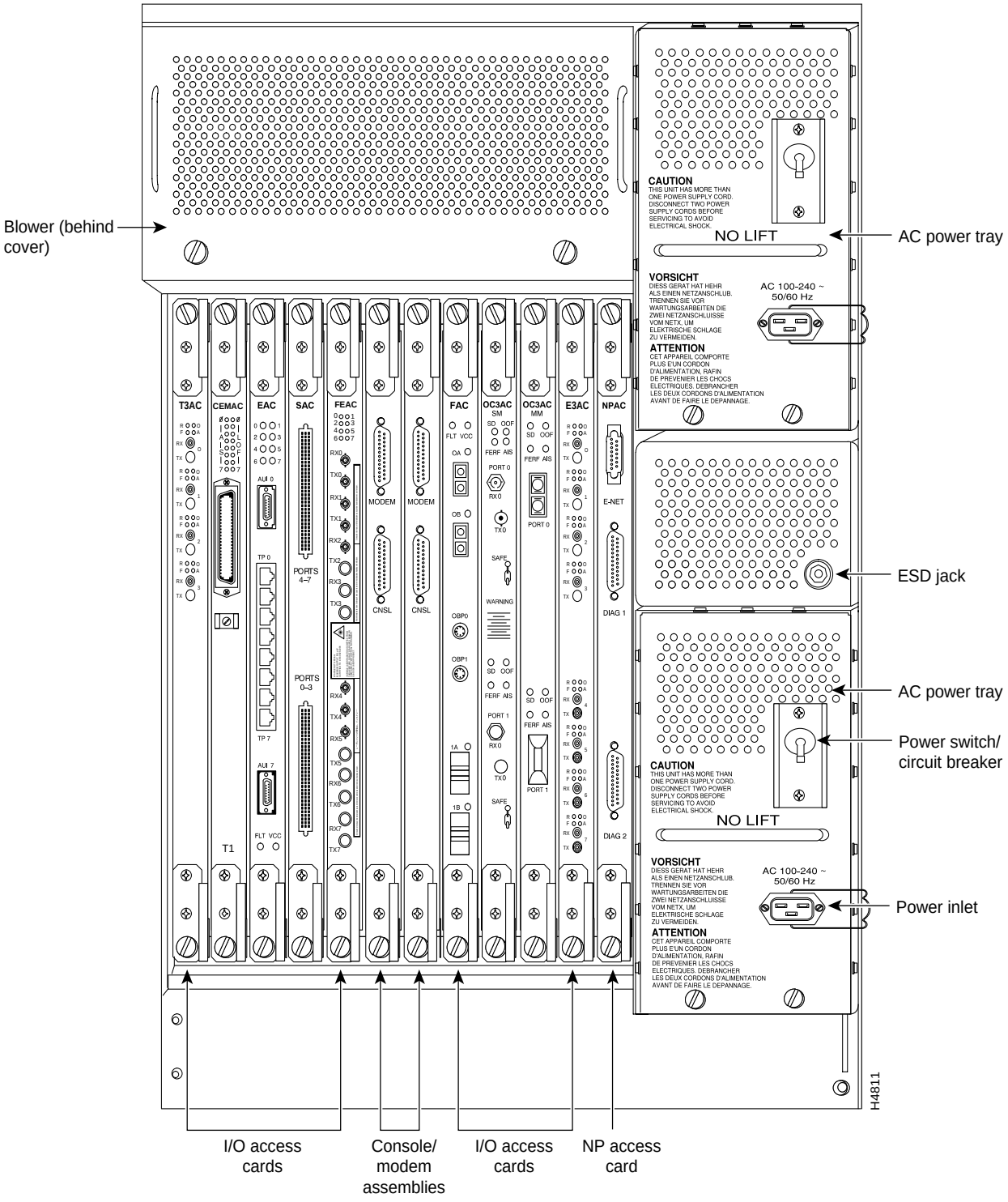


Figure 2-2 Rear View of AC-powered LightStream 2020 Chassis



Wiring a DC-Powered System

The procedure in this section explains how to wire a DC-powered LS2020 switch to a DC power source. This task should be performed only by qualified service personnel or a licensed electrician.

This section applies only to systems with the DC power option. If you have a standard AC-powered system, skip to the section “Installing Fantails.”

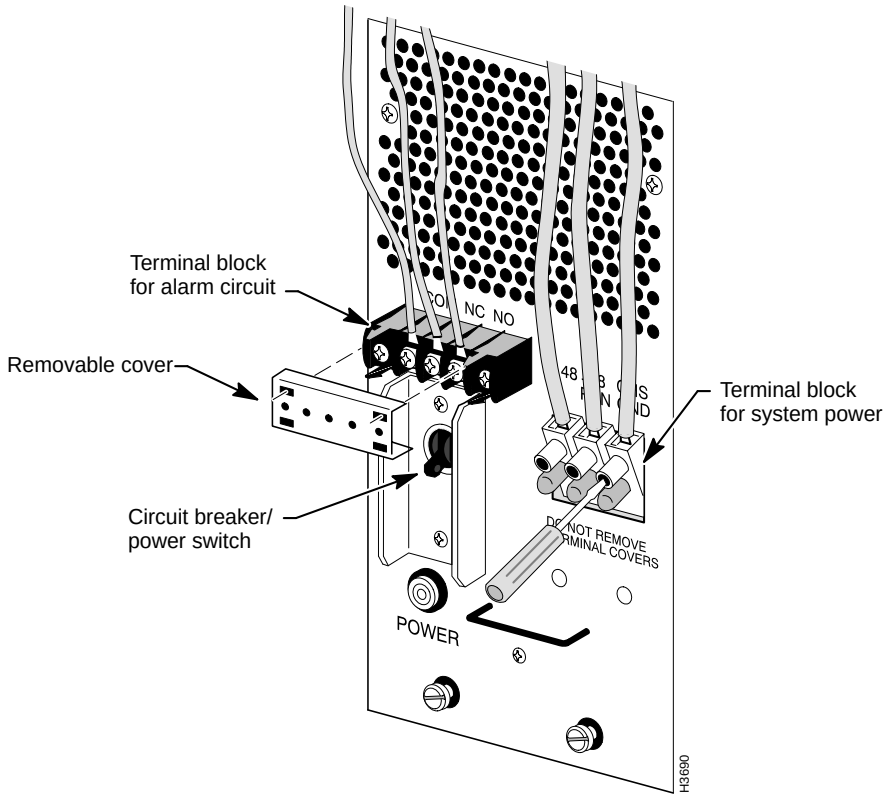
For general information on DC-powered LS2020 systems, see the *LightStream 2020 Hardware Reference and Troubleshooting Guide*. For power specifications, see the *LightStream 2020 Site Planning and Cabling Guide*.

Preparation for Wiring

Note the following in preparation for wiring a DC-powered LS2020 switch:

- The system power connection on the DC power tray is provided by a 3-position terminal block, as shown in Figure 2-3. The –48, –48RTN, and CHS GND connections providing –48VDC power to the system require a minimum of number 10AWG wire for the 24A-rated load. The terminal block is rated to accept up to number 8AWG solid wire. The use of ferrules to terminate these wires is recommended.
- The alarm circuit connection to the DC power tray is provided by a smaller 3-position terminal block, also shown in Figure 2-3. The COM, NO, and NC connections providing the circuit breaker alarm indication should be wired with number 22AWG or larger wire. The use of number 6 spade or ring lug terminals for these connections is recommended.
- Obtain a slot-tip screwdriver for securing the system power terminals and a Phillips screwdriver for securing the alarm circuit terminals.

Figure 2-3 Connections to DC-powered Chassis



Wiring Procedure

Warning The wiring task should be performed only by a licensed electrician or qualified service personnel. Untrained personnel may be exposed to hazardous DC voltages.

To wire a DC-powered LS2020 switch to a DC power source, perform the following steps:

Step 1 Ensure that the circuit breaker/power switch on each DC power tray is OFF.

Step 2 Ensure that power to the circuit to which you will connect the LS2020 switch is OFF.

Step 3 Connect the three system power wires to the LS2020 terminal block, using the slot-tipped screwdriver to secure the terminals. Do not remove the terminal covers at the base of the terminal block.

Step 4 To connect the alarm circuit, remove the plastic terminal block cover (see Figure 2-3) and set it aside for the time being.

Step 5 Connect the alarm wires to the LS2020 terminal block, using the Phillips screwdriver to secure the terminals.

Step 6 Replace the terminal block cover.

Step 7 Repeat the procedure above if the LS2020 switch contains a second DC power tray.

Step 8 Observe the green power LED on the front of the power tray when power is applied. If the LED is not lit, check for incorrectly connected wires or problems in the DC power source.

Installing Fantails

This section explains how to mount and connect fantails in your LS2020 switch (see Figure 2-4). Fantails provide connectors for data cables on *low-speed* (V.35, X.21 and EIA/TIA-449) lines and *T3* lines that are attached to cell line card/T3 access cards in an LS2020 switch.

If your system has no low-speed or cell line card/T3 modules, skip to the section "Attaching Data Cables."

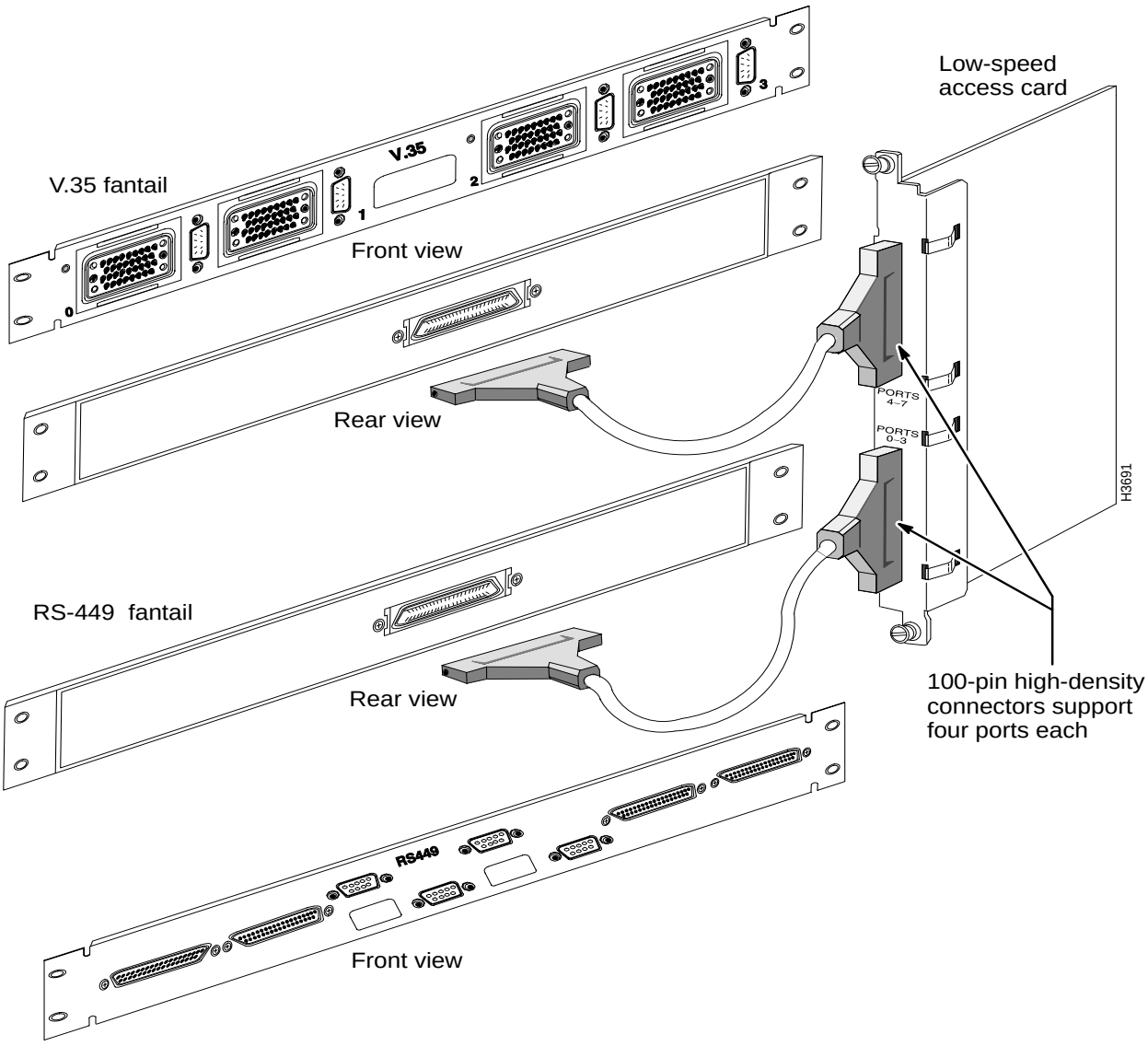
Required Tools and Equipment

Obtain the following equipment and tools in preparation for installing fantails:

- Fantails in the desired quantity (provided by Cisco Systems).
- Required fantail cables (provided by Cisco Systems).
- Fantail mounting screws, clip nuts, and washers (provided by Cisco Systems). If your equipment rack has metric-threaded rails, you must provide appropriate mounting screws.
- A 5/16-inch slotted-tip screwdriver.
- Adhesive labels for making appropriate notations on each fantail.
- A grounding wrist strap for ESD protection during fantail installation.

Note If you are installing X.21 fantails and you plan to configure the ports as DTEs, you must obtain and install a 15-pin male-to-male gender converter on each port in order to change the female connector to a male connector. Note, however, that the gender converters are not required for X.21 ports configured as DCEs.

Figure 2-4 Fantail Cable Connections



Fantail Installation Procedure

To install fantails in your LS2020 switch, perform the following steps:

Note Before installing fantails, check the interface jumpers on each low-speed access card. These jumpers must be set to the interface displayed on the fantail(s) for that card. For instructions on setting interface jumpers, see the *LightStream 2020 Hardware Reference & Troubleshooting Guide*.

Step 1 Select a position on the rack to mount the fantail. Attach the four clip nuts provided with the fantail to the appropriate holes in the rails.

Step 2 Put on the ESD wrist strap and connect it to the ESD jack on the rear of the LS2020 chassis.

Step 3 Attach the fantail cable(s) to the back of the fantail and the corresponding access card in the chassis. (Performing this task now is recommended, rather than installing the fantail first and having to reach behind it to attach the cable(s) to a connector that you cannot observe directly.) Note that the cable is reversible; that is, either end of the cable can be connected to the fantail. Exercise care to avoid suspending the weight of the fantail on the cable.

Step 4 Attach the fantail to the rails with the mounting screws and washers provided, using a slot-tip screwdriver.

Step 5 Label the fantail with the slot number or the name of the interface module to which the fantail is connected.

Step 6 Repeat Step 1 and Steps 3 through 5 to install additional fantails in your LS2020 switch.

Note If you are mounting an X.21 fantail, set the DTE/DCE switches for each port to the desired mode. (See the *LightStream 2020 Hardware Reference and Troubleshooting Guide* for more detailed instructions on configuring X.21 ports as DTEs or DCEs.) If you select a DCE interface, note that you must install a gender converter on each DTE port in order to change the female connector to a male connector.

Connecting Cables

To connect cables to your LS2020 switch, perform the following steps:

Step 1 If you have any FDDI cards in your LS2020 switch, install connector keys provided by the cable vendor onto your FDDI cables. The keys make it impossible to attach a cable to the wrong kind of connector on the FDDI card.

Step 2 If you have any OC-3c or FDDI cards in your LS2020 switch, remove and save the protective covers on the ports that will be used. Leave any unused ports covered.

Step 3 If you have any E1 CEMAC cards (circuit emulation access cards) in your LS2020 switch, check the user-settable jumper settings on the card(s). These jumpers allow you to select termination impedance and grounding on the receive line, as well as the pulse amplitude and grounding on the transmit line.

As default values, the termination impedance and pulse amplitude jumpers are set to 120 ohms, and the transmit and receive lines are not grounded. Use these default settings if you plan to use the E1 CEMAC card without a fantail. However, if you do plan to use a fantail (which provides 75-ohm interfaces), you must use 75-ohm settings for termination impedance and pulse amplitude and set grounding to on.

For more detailed information about changing the E1 CEMAC card jumper settings, consult the *LightStream 2020 Hardware Reference and Troubleshooting Guide.*

Step 4 Connect any available external data cables. (Refer to the *LightStream 2020 Site Planning and Cabling Guide* for details about data cables and connectors.) If you have Ethernet cards in your LS2020 switch, note that each card supports only eight ports (0 through 7), although 10 physical connectors are available on the access card. Note also that you can use only one of the 10Base-T or AUI connections on ports 0 and 7.

Note For ease of maintenance, route cables at the back of the LS2020 chassis in a way that enables you to later remove any access card without disconnecting cables attached to other access cards or fantails.

Closing the Chassis

Before applying system power, check the front and back of the system to ensure that all boards, disks, blowers, bulkheads, filler panels, and covers are in place and secured firmly to the chassis frame. When in place, these items form an enclosure that serves three important functions:

- Prevents exposure to hazardous voltages and currents inside the chassis.
- Confines electromagnetic interference (EMI) within the chassis, a requirement for meeting EMI standards. Emissions from an LS2020 switch that is not fully enclosed may interfere with other ambient equipment.
- Maintains the flow of cooling air through the chassis. Air flow disturbances can result in thermal problems that may induce electronic component failures.

Caution Do not operate an LS2020 switch without first ensuring that all components removed from the installation procedure are restored to their original position in the chassis. The LS2020 switch must operate properly at all times to avoid exposure to hazardous voltages, to confine EMI radiation within the enclosure, and to maintain the proper flow of cooling air through the chassis.

Applying System Power

You can power your LS2020 switch with either an AC or a DC power tray. In addition, you can equip your LS2020 switch with an optional (redundant) power tray of like type (see Figure 2-5).

To power up an LS2020 switch, perform the following steps:

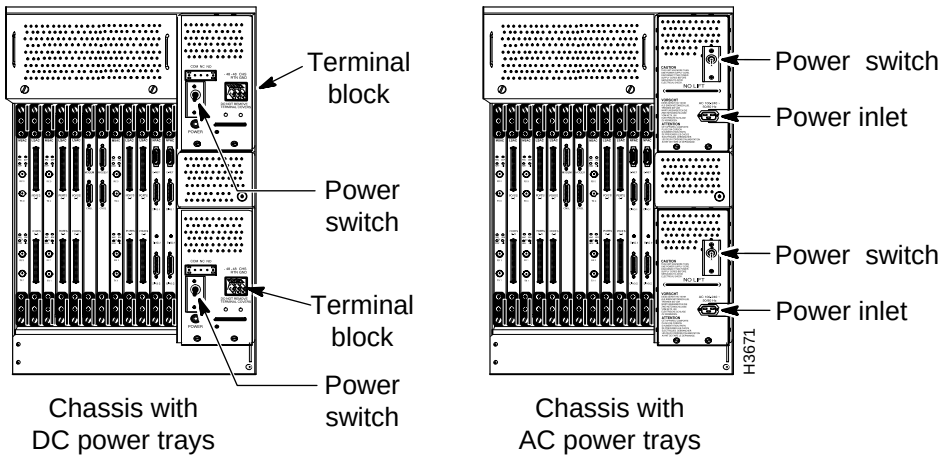
Step 1 If you have an AC-powered system, plug one end of the power cord into the power inlet on the power tray and plug the other end into a dedicated AC power outlet. Note that the power inlet on the rear panel has a wire bail latch for securing the power cord to the chassis. Flip the AC power switch to the left of the power inlet to the up position.

If your system is equipped with a second AC power tray, repeat Step 1 for this tray.

Step 2 If you have a DC-powered system, flip the DC power switch located on the power tray panel to the up position. (This step assumes that your LS2020 switch has already been connected to a DC power source by qualified service personnel or a licensed electrician, as described in the section “Wiring a DC-Powered System”).

If your system is equipped with a second DC power tray, repeat Step 2 for this tray.

Figure 2-5 LightStream 2020 AC and DC Power Trays

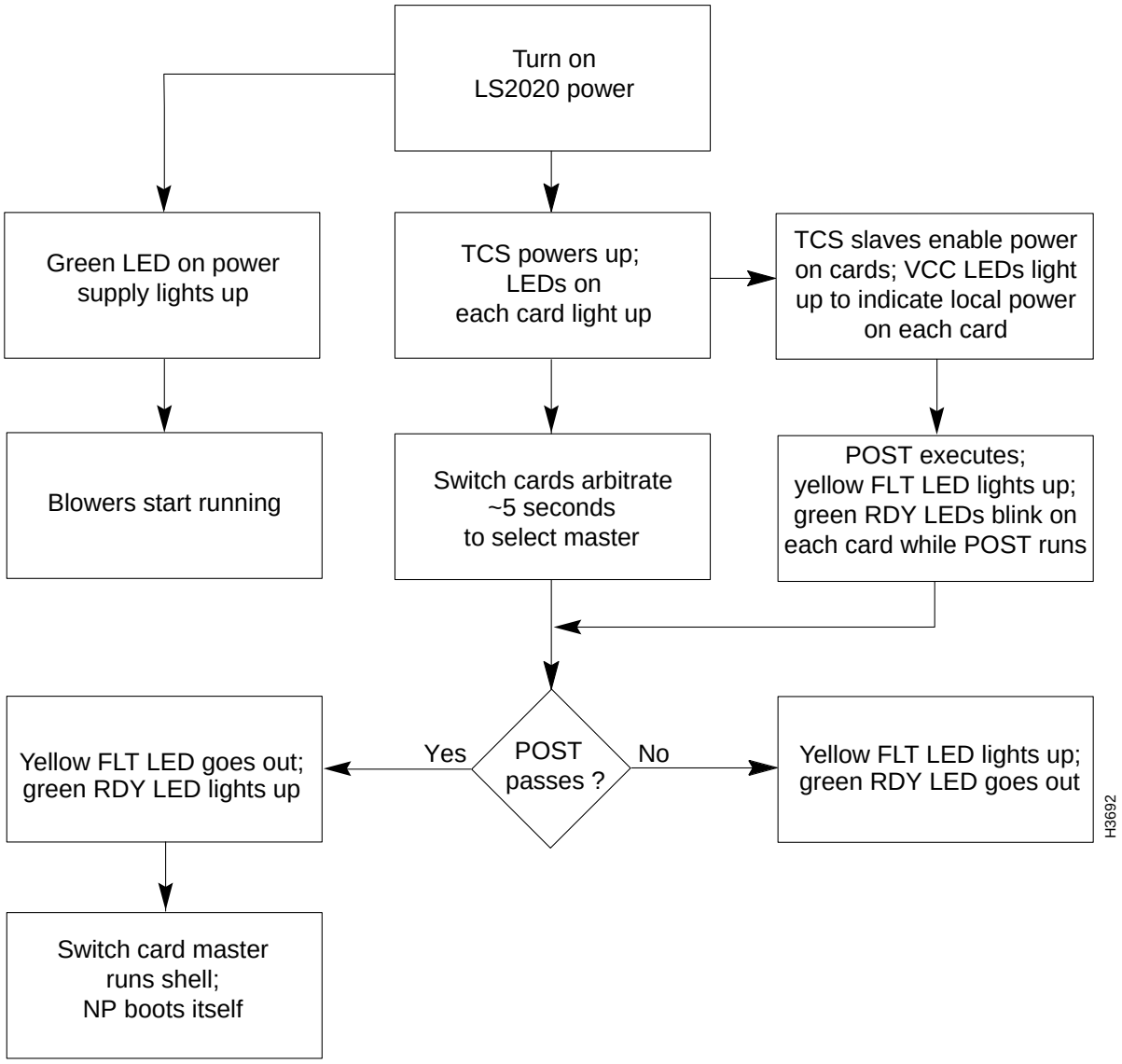


Note When the LS2020 switch is powered up, the blowers start running and the test and control system (TCS) applies power to the cards and initiates the power-on self test (POST) sequence. LEDs on the power tray(s) and the individual cards indicate operational status, as reflected in the flow chart in Figure 2-6. The power-up sequence, including the POST, takes a minute or less.

Step 3 If the green ready (RDY) LED on each card lights up (indicating operational status), proceed to the next section "Installing Modems." If a yellow fault (FLT) LED stays lit on any card, indicating the existence of a problem, do either of the following:

- Refer to the *LightStream 2020 Hardware Reference & Troubleshooting Guide* to determine why the FLT LED indication occurred and how to correct it.
- Temporarily remove the faulty card from the LS2020 chassis and bring up the rest of the system.

Figure 2-6 LightStream 2020 Power-up Sequence



Installing Modems

You should install a modem for each switch card in the LS2020 chassis. In the event that an operational problem causes a node to be isolated from the rest of the network, the modem may be the only means available for communicating with that node.

The modem connects to the modem port on the modem/console assembly bulkhead at the back of the LS2020 chassis, using the modem cable described in the *LightStream 2020 Site Planning and Cabling Guide*.

A modem attached to an LS2020 node must be a V.42 Hayes-compatible unit capable of operating at 2400 baud. The following modems are compatible with the LS2020 switch:

- Zoom 9624V
- Zoom FXV (FXV9624V)
- Hayes SmartModem 2400 V.24

For information on the default modem port settings and how to change them, see the *LightStream 2020 Network Operations Guide*.

Basic LS2020 Configuration Tasks

This section explains how to enter basic configuration information for your LS2020 chassis in order to make it operable in your networking environment and manageable from your NMS. You must perform these procedures for the NP card(s) in your LS2020 chassis.

Note If you experience a problem while performing basic configuration tasks, you may need to shut down and restart the system. Refer to the *LightStream 2020 Hardware Reference & Troubleshooting Guide* for instructions on performing an orderly shutdown.

Required Configuration Information

You need to have the following information available before beginning the basic configuration procedures:

- Passwords for the four default login accounts for the LS2020 switch root, oper, npadmin, and fldsup.
- Host name for the LS2020 node.
- IP address and subnet mask for the:
  - Primary NP, as well as for the backup NP, if present.
  - NP Ethernet interface, if present.
  - Default router for the LS2020 network. This IP address should be configured only if the default router and the NP Ethernet interface are attached to the same LAN.
- Trunk port configuration information for one or more trunk ports on the node. For nodes not directly connected to the NMS, the trunk port will be used to load a full LS2020 node configuration from the NMS.

Passwords

You must create a password for each of the four default login accounts on the LS2020 switch: *root*, *oper*, *npadmin*, and *fldsup*. See the *LightStream 2020 Network Operations Guide* for more information about default login accounts.

A password must be at least six characters in length. It can be as long as you wish, but only the first eight characters are used. Any combination of characters is acceptable, including spaces.

Host Name

You must assign a unique host name to each LS2020 node. Typically, a name can be chosen to reflect the node's geographic location (for example, Tokyo2) or its function within an organization (for example, mfg3).

The name may consist of any combination of *letters* and *numbers* up to 32 characters, but it must not begin with a number. Thus, Pensacola23 is a valid host name, but 23Pensacola is not; similarly, Pensacola.23 is not a valid name, since it contains a character other than a letter or number.

IP Addresses and Masks

For each LS2020 node, you must provide from one to four IP addresses and associated network masks, as described below:

- Primary NP address and mask (for every LS2020 node in the network)

  Nodes in an LS2020 network use their primary NP addresses to communicate network management traffic to each other.

Note All NP addresses within the same LS2020 network must have the same network number, and each node must have a unique host ID.

- Subnet mask for the primary NP address

  The subnet mask specifies which portion of the IP address is the network number and which portion is the host ID. This mask should be configured to be the same for all nodes in a given LS2020 network.

- Secondary NP address, only if a backup NP is present in the chassis

  If a node has a second (backup) NP, the node uses its primary and secondary NP addresses to pass network management traffic between the two NPs within the node. The primary NP address is used by whichever NP is active.

Note All NP addresses within the same LS2020 network must have the same network number, and each node in the network must have a unique host ID.

- Ethernet address and mask of the NP (when either the primary or secondary NP is connected to an Ethernet LAN)

  An Ethernet LAN may be attached to the NP for communicating network management traffic between the node and the NMS. If an Ethernet LAN is connected to the NP, the NP's Ethernet IP address must be configured. If a backup NP is present in the chassis, both NPs must be attached to the same Ethernet segment. The NP's Ethernet IP address is used by whichever NP is primary (active).

Note This Ethernet IP address has the network number of the attached Ethernet LAN (which must be different from the network number of the LS2020 network). The Ethernet IP address also has a host number that is assigned by the Ethernet LAN administrator.

- Subnet mask for the NP's Ethernet address

  The subnet mask for the NP's Ethernet address specifies which portion of the IP address is the network number and which portion is the host ID. This mask is the same for all nodes on the Ethernet LAN attached to the primary NP. You can obtain the subnet mask from the Ethernet LAN administrator.

- Default router (only if needed for reaching the NMS)

  If an Ethernet LAN is attached to the primary NP, but the NMS is not directly connected to that Ethernet LAN, a default router can be configured as the means for communicating network management traffic between the NP and the NMS. The IP address for the default router has the same network number as the attached Ethernet LAN (this number must be different from the network number of the LS2020 network). The IP address for the default router also has a host number assigned by the Ethernet LAN administrator.

  If you plan to operate with a single physical LS2020 network under your network number and the LS2020 network is a class C network, record 255.255.255.0 as the subnet mask. (For a class B network without subnetting, record 255.255.0.0 as the subnet mask; for a class A network without subnetting, record 255.0.0.0 as the subnet mask.)

Network management can also be accomplished by means of an Ethernet LAN connected to an ordinary Ethernet data port (that is, an Ethernet access card port) on the LS2020 node. The NMS, however, must be attached directly to that Ethernet LAN. In this case, do not configure the NP's Ethernet address or default router address. Furthermore, in the current release, to provide access control over Ethernet ports that can be used by an NMS, a port configuration parameter has been added which allows you to specify whether IP traffic destined for an NP is forwarded or blocked. This configuration parameter, *lsLanPortNPTrafficFilter,* determines whether or not inbound frames received on an Ethernet port are delivered to any NP in the network. The default value of this parameter for all access card Ethernet LAN ports is to block IP traffic to an NP. Therefore, you must explicitly set this parameter, on a port-by-port basis, to forward traffic to an NP. The Ethernet ports on the NP access cards remain unaffected in the current release, that is, these ports always pass IP traffic to the NP.

For detailed information about configuring Ethernet port attributes, see the *LightStream 2020 Configuration Guide.* For detailed information about IP addresses, subnet masks, and network classes, see the *LightStream 2020 Site Planning and Cabling Guide*.

Trunk Port Information

For each trunk port that you configure, the following information is required:

- The trunk card type: low speed (T1/E1 rate), T3, E3, or OC-3c
- The number of the chassis slot in which the trunk card is located
- The port number (except on an OC-3c card, which has only one trunk port)
- Additional port information needed varies, depending on the type of port being configured, as indicated below:
  - For a low-speed trunk port, specify the DTE/DCE type and DTE or the DCE bit rates.
  - For a T3 trunk port, specify the line type (C-bit parity or clear channel), the cable length (0 – 450 feet or 450 – 900 feet), and the cell payload scrambling mode (enabled or disabled).
  - For an E3 trunk port, specify the cable length (0 – 400 feet, 300 – 1000 feet, 800 – 1300 feet, or 1100 – 1900 feet) and the cell payload scrambling mode (enabled or disabled).
  - For an OC-3c trunk port, specify the clocking mode (internal or external).

For more information about trunk port configuration, refer to the *LightStream 2020 Configuration Guide*.

Attaching a Terminal to a Console Port

This section explains how to attach a VT100 terminal (or equivalent) to the console port of a Release 2 switch card and how to match the baud rate between them.

Background Information

Prior to Release 2.1 of the LS2020 platform software, the TCS hub code for a Release 2 switch card (SC2) supported baud rate selection for both the console and modem ports through what was called the "BREAK" detection mechanism (also referred to as the "auto-baud" or "pseudo-auto-baud" mechanism). Use of this mechanism, which involved multiple activations of the Break key for baud rate selection, is no longer supported. Under this previous scheme, the midplane EEPROM locations used to maintain the console and modem port baud rates were "reserved" and, hence, not initialized with appropriate default values.

Now, when new TCS hub code is installed in a Release 2 switch card that has not had these "reserved" locations initialized, the new code evaluates the contents of these EEPROM locations and initializes them, if required, with appropriate default values. See the section below entitled "Setting Console/Modem Baud Rates through TCS Hub Commands" for these default values and the order of precedence for other possible baud rates for the console and modem ports.

Setting Console/Modem Baud Rates through TCS Hub Commands

To detect and set baud rates for the console and modem ports for Release 2 switch cards, you use the TCS hub **show** and **set** commands, respectively. These commands interpret and manipulate the contents of specific fields in the midplane EEPROM used for storing initialized baud rates for the console and modem ports.

Note Baud rate detection and selection for the console and modem ports apply only to Release 2 switch cards.

The general form of the TCS hub **show** command for baud rate detection is outlined below:

`TCS hub<<A or B>>` **`show <sa | sb> <console | modem> baudrate`**

where:

`TCS hub<<A or B>>`	Is the TCS hub prompt for the switch card (either switch card A or B, as appropriate)
`show`	Is the command that operates in conjunction with command arguments to display the baud rate for the specified switch and the specified port
`<sa | sb>`	Denotes that the **`show`** command is to apply to switch card A or B, whichever is specified
`<console | modem>`	Denotes that the **`show`** command is to apply to the console port or the modem port, whichever is specified
`baudrate`	Displays the baud rate for the specified port

The general form of the TCS hub **set** command for baud rate selection is outlined below:

```
TCS hub<<A or B>> set <sa | sb> <console | modem> baudrate <rate>
```

where:

`TCS hub<<A or B>>`	Is the TCS hub prompt for the switch card (either switch card A or B, as appropriate)
`set`	Is the command that operates in conjunction with command arguments to set the baud rate for the specified switch and the specified port
`<sa | sb>`	Denotes that the **`set`** command is to apply to switch card A or B, whichever is specified
`<console | modem>`	Denotes that the **`set`** command is to apply to the console port or the modem port, whichever is specified
`baudrate`	Indicates that the **`set`** command is to set the baud rate for the specified port
`<rate>`	Defines the actual baud rate for the specified port

For the Modem Port:

The following is the order of precedence of the baud rate for the modem port on a Release 2 switch card:

1 2400 (default value)

2 9600

For the Console Port:

The following is the order of precedence of the baud rate for the console port on a Release 2 switch card:

1 9600 (default value)

2 19200

3 2400

4 1200

5 4800

6 38400

7 300

Note The console port baud rate can be changed at any time, but the change will take effect only on powerup of the LS2020 chassis or a reset of the applicable switch card. Similarly, the modem port baud rate can be changed at any time, but the change will take effect only on powerup of the LS2020 chassis, on a reset of the applicable switch card, or when the modem port is reinitialized by means of the TCS hub **`init`** command.

Changing Modem Port Baud Rate if Modem Connection Cannot Be Established

If the modem port on a Release 2 switch card (SC2) is initialized with a baud rate other than that with which the modem can operate, you can change the modem port baud rate through either of two methods, whichever is appropriate for your LS2020 configuration:

- **Method 1, changing modem baud rate locally**—This method requires access to the local console of your LS2020 switch.

- **Method 2, changing modem baud rate through use of redundant components**—With this method, the assumption is made that the local console terminal is not available (for example, if a software installation or upgrade is being done remotely). The assumption is also made that your LS2020 chassis is equipped with redundant Release 2 switch cards and modems, and that you have the ability to dial into the LS2020 chassis using the other switch card and modem.

Method 1

If you have access to the local console, perform the following procedure to match the modem port baud rate:

Step 1 Issue the **set** command from the console:

```
set {sa | sb} modem baudrate {2400 | 9600}
```

where `{sa | sb}` represents either Release 2 switch card A or B, as appropriate, and `{2400 | 9600}` represents the available choices in matching the modem port baud rate.

Step 2 Issue the **init** command at the TCS hub prompt:

```
init {sa | sb} modem
```

This command initializes the modem port on the specified switch card with the selected baud rate.

Method 2

If you do not have access to the local console, but you can dial into the LS2020 chassis by means of a switch card, perform the following procedure to match the baud rate of the desired modem port:

Step 1 Dial in to the LS2020 chassis and determine the address of the switch card to which the desired modem is attached, that is, the modem for which you are attempting to match the baud rate.

Step 2 Issue the **set** command at the TCS hub prompt:

```
set {sa | sb} modem baudrate {2400 | 9600}
```

In this command, specify the switch card having the non-matching baud rate. For example, if you have dialed into the LS2020 chassis through switch card A, specify **sb** in the **set** command; if you have dialed into the chassis through switch card B, specify **sa** in the **set** command. Finally, specify the desired baud rate for the modem port.

Step 3 Issue the **init** command at the TCS hub prompt:

```
init {sa | sb} modem
```

Again, as in Step 2 above, specify the switch card having the non-matching baud rate. This command initializes the modem port on the switch card with the specified baud rate.

Attaching a Terminal and Matching the Baud Rate

Figure 5-2 in Chapter 5, “Additional Components” illustrates the console/ modem assembly for a switch card. This assembly is inserted in the access (rear) side of the LS2020 chassis opposite a corresponding switch card. This assembly provides the means for attaching a terminal or a modem to your LS2020 switch.

To attach the terminal cable to the console port and to match the terminal and the console port baud rates, perform the following procedure:

Step 1 Connect the cable for the VT100-compatible terminal to the console (CNSL) port on the console/modem assembly.

The switch card slots in the front of the LS2020 chassis are labeled A and B, as are the corresponding slots for the console/modem assembly bulkhead(s) in the rear of the LS2020 chassis. If the primary TCS hub is on switch card A, connect the terminal cable to the console port of the bulkhead in rear slot A; similarly, if the primary TCS hub is on switch card B, connect the terminal cable to the console port of the bulkhead in rear slot B.

Note If your LS2020 chassis contains two switch cards, connect the terminal cable to the console port on the console/modem assembly for the switch card with the primary TCS hub. To identify this card, examine the green TCS SEL LED on each switch card. The card with the TCS SEL LED lit is the primary TCS hub.

Step 2 Press Return on the terminal keyboard.

If the `TCS hub<<A or B>>` prompt appears, or if some other prompt appears (see the note below), after you press Return, the prompt signifies agreement between the terminal baud rate and the console port baud rate and indicates that the terminal is properly attached.

Note If the baud rates match, the system may respond with other than the `TCS hub<<A or B>>` prompt, depending on the card to which a connection exists. For example, if you had previously established a connection to an NP card via the TCS **connect** command, the system would respond with the bash (`#`) prompt, rather than the `TCS hub<<A or B>>` prompt. The appearance of any valid system prompt on the terminal screen after Return key activation signifies baud rate agreement.

When the system verifies itself as being responsive (through the return of an appropriate prompt), you can make the terminal fully operational in your LS2020 environment by connecting it to the NP. To do so, proceed directly to the section below entitled "Connecting the Terminal to the NP."

However, if the system does not respond at all, or if screen output is garbled after you press Return, one of the following conditions may pertain:

- An apparent mismatch of the terminal and the console port baud rates exists. Such a mismatch may occur, for example, if the console port has been initialized previously with a baud rate different from that of the terminal.

  In this case, you must attempt to achieve a baud rate match by continuing with Step 4 below.

- A connection may exist to a non-operational card or a card that has been physically removed from the system, but to which a logical connection still exists.

  In this case, proceed with Step 3.

Step 3 Issue the character sequence **`.** (back quote plus dot, that is, left single quote plus period) at the terminal keyboard and press Return. This action breaks the connection which may exist between the switch card and any nonoperational or missing card.

If a valid system prompt does not appear following Return key activation, a baud rate mismatch still exists and you must continue with Step 4.

Step 4 For baud rate matching purposes, your LS2020 chassis must be equipped with at least one switch card and a terminal.

Set the terminal to a new baud rate, using the order of precedence defined for the console port in the section above entitled “Setting Console/Modem Baud Rates through TCS Hub Commands.”

Step 5 Press Return on the terminal keyboard.

Step 6 If the baud rates match after you press Return, the TCS hub prompt is displayed, indicating that the terminal is properly attached.

Proceed to the section below entitled “Connecting the Terminal to the NP.”

However, if the TCS hub prompt is not displayed, you must repeat Step 4 and Step 5 until a match with one of the defined baud rates is achieved.

If the terminal does NOT support one of the defined console port baud rates, proceed with Step 7.

If you cycle through all the possible console baud rates without achieving a match, an error condition exists. In this case, contact your Cisco Systems customer support representative.

Step 7 For baud rate selection, this step requires that your LS2020 be equipped with a modem attached to the same switch as the terminal and that you have the ability to dial in to the LS2020 chassis.

If you can dial in to the LS2020 chassis, do so and continue with Step 8.

If you are unable to dial in to the chassis, skip to Step 10.

Step 8 Use the TCS hub **`set <switch slot> console baudrate <rate>`** command to set the baud rate of the console port to agree with that of the terminal you are attempting to attach.

Step 9 Reset the applicable switch card.

This action reinitializes the console port to the baud rate selected in Step 8.

Proceed to the section below entitled “Connecting the Terminal to the NP.”

Step 10 For baud rate selection, this step requires that your LS2020 chassis be equipped with two switch cards. It also assumes that you can communicate with the switch card that currently needs no baud rate adjustment.

Dial in to this card via its modem port or use the terminal attached to its console port to set the baud rate, as instructed in Step 11.

However, if your LS2020 chassis does NOT contain redundant switch cards, or if neither switch card is accessible via its console or modem port, an error condition exists. In this case, contact your Cisco Systems customer support representative.

Step 11 Use the TCS hub **`set <“other” switch slot> console baudrate <rate>`** command to set the console port baud rate for the “other” switch card to agree with the baud rate of the terminal you are attempting to attach.

Step 12 Reset the “other” switch card manipulated in Step 11 above.

This action reinitializes the console port to the baud rate selected in Step 11.

Proceed to the section below entitled “Connecting the Terminal to the NP.”

Connecting the Terminal to the NP

To connect a terminal to the NP in your LS2020 switch, perform the procedure below. For simplicity, this procedure assumes that you are using the NP in slot 1.

Note This procedure assumes that you have already attached a terminal to the Release 2 switch card, as described in the preceding section entitled "Attaching a Terminal and Matching the Baud Rate."

Step 1 Issue the following command at the TCS hub prompt to reset the NP to a running state:

```
TCS hub<<A>> reset 1
```

Step 2 Issue the following command at the TCS hub prompt to connect to the NP that you want to configure:

```
TCS hub<<A>> connect 1
```

Step 3 When you connect to the NP, part or all of the following countdown sequence is displayed on your screen. Do *not* press Return; allow the boot sequence to continue.

```
System will boot in 5 seconds: hit <RETURN> to interrupt.
System will boot in 4 seconds: hit <RETURN> to interrupt.
System will boot in 3 seconds: hit <RETURN> to interrupt.
System will boot in 2 seconds: hit <RETURN> to interrupt.
System will boot in 1 seconds: hit <RETURN> to interrupt.
```

The screen displays for the boot sequence then continue as shown in Step 1 in the section "Entering Configuration Data" later in this chapter. However, before proceeding with the entry of required configuration data, note the following special consideration about running configuration scripts.

Special Consideration: Running Scripts Separately

When you enter configuration data, two scripts are invoked automatically that prompt you for basic configuration information (see bullets below). If you make a mistake entering information in response to script prompts, you can run the scripts again separately. To do so, enter the name of the script you want to run at the bash# (root) prompt or the single-user ($) prompt.

- **bin/settimezoneinfo**—Sets the time, date, daylight savings method, and time zone.
- **usr/app/base/bin/setsnmpconfig**—Sets the host name, the IP address, the Ethernet IP address, and the default router IP address. Also sets up trunk ports so that a complete configuration can be downloaded from the NMS to a target LS2020 node.

Note These configuration scripts are intended for use only during the installation process.

When you run these scripts from the command line, they behave very much as they do in the scripted configuration procedure. However, one difference to note is that the **setsnmpconfig** command checks for the presence of configuration files. (Normally, these files are not present during a typical installation of a new LS2020 switch.) If the system finds such files, it asks if you want to continue, as shown below:

```
Configuration information already exists. If you continue, the configuration
information on this network node will be destroyed by overwriting the
following files:
   /usr/app/base/config/configure.netdb
   /usr/app/base/config/mma.db.dir
   /usr/app/base/config/mma.db.pag
Continue? (y/n) [n]
```

Caution If you answer **y** (yes) to this query, the system overwrites the existing configuration files for this particular LS2020 node, effectively deleting the files.

If configuration files *are present* and you choose not to overwrite them, the **setsnmpconfig** script cannot continue. Instead, the script exits and returns you to the command line.

If configuration files *are not present*, or if they *are present and you choose to overwrite them*, a script prompts you to enter network configuration information, as outlined in the following section, "Entering Configuration Data."

Entering Configuration Data

In this procedure, a script prompts you to enter basis LS2020 configuration information. In performing this procedure, it is assumed that you have already initiated the boot sequence, as previously described in the section "Connecting the Terminal to the NP."

Note If a problem occurs with the LS2020 hard disk or the platform software, an error message is displayed instead of the system output shown in Step 1 below. In this case, refer to Appendix B Software Reinstallation.

Step 1 Observe the system's boot display:

```
**** LynxOS is down ****
***booting: drive:0, partition:0, kernel:"lynx.os", flags:0x4308
Resetting SCSI bus
Kernel linked for 0xea010000
LOAD AT 0x10000
        471040+40960+136260[61824+50608]
TOTAL SIZE: 745080 at 0x1001c
START AT 0x10020
NP memory size: 32 MB
ILACC: EEPROM enet addr:8:0:8:0:14:25, Silicon Rev:0x5, IB:0xea146620
virtual console: IB: 0xea139d20
NCR 53C710: Chip Revision: 0x2, IB: 0xec13d000

LynxOS/68040-MVME167 Version 2.2.1
Copyright 1992 Lynx Real-Time Systems Inc.
All rights reserved.

LynxOS release 2.2.1, level 1: NP-LynxOS #57: compiled Mar 05 1996 12:38:19

LynxOS Startup: ma

fsck /dev/sd0a
(all sizes and block numbers in decimal)
(file system creation time is Tue Mar 5 20:07:12 1996)
checking used files
recovering orphaned files
making free block list
making free inode list
43967 free blocks 3343 free inodes

fsck /dev/sd0b
(all sizes and block numbers in decimal)
(file system creation time is Tue Mar 5 20:07:33 1996)
checking used files
recovering orphaned files
```

```
making free block list
making free inode list
54194 free blocks 3633 free inodes

fsck /dev/sd0c
(all sizes and block numbers in decimal)
(file system creation time is Tue Mar 5 20:07:53 1996)
checking used files
recovering orphaned files
making free block list
making free inode list
49658 free blocks 3698 free inodes

fsck /dev/sd0d
(all sizes and block numbers in decimal)
(file system creation time is Tue Mar 5 20:08:11 1996)
checking used files
recovering orphaned files
making free block list
making free inode list
69884 free blocks 4434 free inodes

mounting all filesystems
Starting VM System ... Virtual Memory Engaged!
```

Step 2 Enter the appropriate time and date information, as prompted by the system:

```
The timezone information for this system has not been configured!
Set the daylight savings and time zone information? (y/n) [y] y

Set the daylight savings method to one of the following values:
     0 (no daylight savings)
     1 (USA)
     2 (Australia)
     3 (East Europe)
     4 (Central Europe)
     5 (Western Europe)
  Daylight savings method: 1

Set the timezone by specifying the number of minutes west of Greenwich
  Examples:
     300 (US Eastern Time)
     360 (US Central Time)
     420 (US Mountain Time)
     480 (US Pacific Time)
  Minutes west of Greenwich, England: 300

At the prompt, enter a new date or press <RETURN> to continue.

  The date is set to Tue Mar 5 16:04:57 EDT 1996
  Enter date (yymmddhhmm[.ss]: 9305041607

At the prompt, enter a new date or press <RETURN> to continue.
  The date is set to Tue Mar 5 16:07:00 EDT 1996
  Enter date (yymmddhhmm[.ss]: Return
```

(The second `Enter date` prompt confirms the initial date entry.)

Note If your LS2020 switch contains two NPs, ensure that their respective clocks agree to within 1 minute. If the clocks differ by more than 1 minute, the software that synchronizes files between the two NPs may not operate properly.

Step 3 Enter passwords for the four default login accounts for the LS2020 switch. For each account, enter **y**, then enter the password twice, as shown below:

```
The following accounts do not have passwords:
   root fldsup npadmin oper

Install a password on the root account? (y/n) [y] y
Enter new password:
Retype new password:

Install a password on the fldsup account? (y/n) [y] y
Enter new password:
Retype new password:

Install a password on the npadmin account? (y/n) [y] y
Enter new password:
Retype new password:

Install a password on the oper account? (y/n) [y] y
Enter new password:
Retype new password:
```

Step 4 Enter the network management configuration information for the LS2020 switch, as requested in the following configuration script. (Note that the `Host Name` and the IP addresses shown in bold typeface in the script below are for illustrative purposes only; you must supply an actual name and real IP addresses in these fields.

Note For an LS2020 switch with two NPs, you must perform this procedure twice—once for each NP. You must enter *identical* information for each NP. Do not reverse the active and secondary IP addresses on the second NP; these addresses are assigned to the entire chassis, not to individual NPs. If you do not enter the same information for *both* NPs, your LS2020 switch will not work.

```
The minimum network management information has not been configured!

Create a minimal network management configuration? (y/n) [y] y

Specify the host name for this network node.

Host name: LightStream1

You must allocate a subnetwork address for the internal network that connects all
network processors in your network. Configure the Chassis Primary (Active) IP address
for use within that subnet.

Chassis Primary (Active) IP Address [a.b.c.d]: 192.1.1.11

Configure the IP subnet mask for the internal network that connects all network
processors in your network.

Chassis Subnet Mask [a.b.c.d]: 255.255.255.0

Does the chassis contain redundant network processors (Y/N)? [N] N
```

If you answer **Y** to this query, proceed to Step 5. Otherwise, continue with the configuration script as follows:

```
Your system may be attached to an external Ethernet LAN by means of the on-board
Ethernet LAN interface on the network processor.
```

```
If the network processor is attached to an Ethernet LAN, you will be asked to provide
the IP address and IP subnet mask of the network processor's on-board Ethernet LAN
interface.

Is the network processor attached to an Ethernet LAN (Y/N)? [N} Y

Configure the IP address for the network processor's Ethernet LAN interface.

Network Processor Ethernet IP Address [a.b.c.d]: 197.112.23.11

Configure the IP subnet mask for the network processor's Ethernet LAN interface.

Network Processor Ethernet IP Mask [a.b.c.d]: 255.255.255.0

Is there an IP router on the attached Ethernet LAN (Y/Y)? [N] Y

Configure the Default IP router on the network processor's Ethernet LAN interface.

Network Processor Ethernet Default IP Router [a.b.c.d]: 197.112.23.1

CHASSIS INFORMATION
 Host Name:                              LightStream1
 Chassis Primary (Active) IP Address:    192.1.1.11
 Chassis Secondary IP Address:           <none>
 Chassis Subnet Mask:                    255.255.255.0

 Network Processor Ethernet IP Address:  197.112.23.11
 Network Processor Ethernet IP Mask:     255.255.255.0

 Network Processor Default IP Router:    197.110.175.2

 Chassis configuration contains 1 network processor.

 Network processor's on-board Ethernet LAN interface is attached to an external
 Ethernet LAN.

Is the chassis and network processor information correct? (Y/N)? [Y] Y
```

If you confirm that the configuration data you have entered in this step is correct by responding **Y** to this query, the script continues with the trunk port configuration query below.

On the other hand, if you wish to change any configuration data, answer "**N**" at the chassis and network processor information query and repeat this step in its entirety. You will be prompted by the configuration script to re-enter all the applicable network management information for your LS2020 switch.

```
Configure trunk port information (Y/N)? [N] N
Creating minimum configuration database...done.
```

Similarly, if you respond **N** to the above trunk port configuration query, the system reports that it is creating a minimum configuration database and that you have completed the basic configuration procedure.

If you respond "**Y**" to the trunk port configuration query, proceed with Step 6.

Step 5 If your LS2020 switch contains a redundant network processor, continue with the configuration script, as follows:

```
Does the chassis contain redundant network processors (Y/N)? [N] Y
```

```
Configure the Chassis Secondary IP address (for use by a network processor
while acting as backup). This address should be an address on the subnetwork
connecting all network processors in your network.

Chassis Secondary IP Address [a.b.c.d]: 192.1.1.12

Your system may be attached to an external Ethernet LAN by means of the
on-board Ethernet LAN interface on the network processors.

In a redundant configuration with two network processors, if the network
processors are each attached to an external Ethernet LAN by means of the
on-board Ethernet LAN interfaces, the two network processors should each be
attached to the same Ethernet LAN.

If the network processors are attached to an Ethernet LAN, you will be asked
to provide the IP address and IP subnet mask of the network processors'
on-board Ethernet LAN interface.

Are the two network processors attached to an Ethernet LAN (Y/N)? [N] Y

In a redundant configuration with two network processors, the primary
(active) network processor provides the logical connection to the attached
Ethernet LAN. Thus you will be asked to specify only one IP address and mask.

Configure the IP address for the network processors' Ethernet LAN interface.

Network Processor Ethernet IP Address [a.b.c.d]: 197.112.23.12

Configure the IP subnet mask for the network processors' Ethernet LAN
interface.

Network Processor Ethernet IP Mask [a.b.c.d]: 255.255.255.0

Is there an IP router on the attached Ethernet LAN (Y/N)? [N] Y

Configure the Default IP router for the network processors' Ethernet LAN
interface.

Network Processor Ethernet Default IP Router [a.b.c.d]: 197.112.23.1

CHASSIS INFORMATION
 Host Name:                              LightStream1
 Chassis Primary (Active) IP Address:    192.1.1.11
 Chassis Secondary IP Address:           192.1.1.12
 Chassis Subnet Mask:                    255.255.255.0

 Network Processor Ethernet IP Address:  197.112.23.12
 Network Processor Ethernet IP Mask:     255.255.255.0

 Network Processor Default IP Router:    197.112.23.1

 Chassis configuration contains 2 redundant network processors.

 Network processors' on-board Ethernet LAN interfaces are attached to an
 external Ethernet LAN.

Is the chassis and network processor information correct? (Y/N) [Y] Y
```

If you confirm that the configuration data you have entered in this step is correct by responding **Y** to this query, the script continues with the trunk port configuration query below.

On the other hand, if you wish to change any configuration data, answer "**N**" at the chassis and network processor information query and repeat this step in its entirety. You will be prompted by the configuration script to re-enter all the applicable network management information for your LS2020 switch.

```
Configure trunk port information (Y/N) [N] N
Creating minimum configuration database...done.
```

Similarly, if you respond **N** to the above trunk port configuration query, the system reports that it is creating a minimum configuration database and that you have completed the basic configuration procedure.

However, if you respond **Y** to the trunk port configuration query, proceed with Step 6 below.

Step 6 If your LS2020 switch is not directly attached to a LAN to which the NMS is also attached, you must configure a trunk so that SNMP configuration traffic can flow between the new LS2020 switch, the LS2020 network at large, and the LS2020 switch attached to the NMS. In operational terms, the trunk port will be used to load a full configuration over the LS2020 network.

The trunk port configuration parameters you specify depend on the type of trunk port that you intend to use for SNMP configuration traffic. For detailed information about the various trunk port configuration parameters supported by the LS2020 switch, refer to the chapter in the *LightStream 2020 Configuration Guide* that describes "port attributes."

However, for the sake of example, a trunk port for a low-speed card has been selected to demonstrate the trunk port configuration procedure. In this particular case, proceed as directed by the following configuration script:

```
Configure trunk port information (Y/N) [N] y

Trunk Card Type:
   1) Low Speed
   2) T3
   3) E3
   4) OC3
Specify the trunk card type (1-4): 1

Specify the trunk card slot number (1-10): 3

Specify the port number (0-7): 0

DCE/DTE Type:
   1) DCE
   2) DTE
Specify the DCE/DTE type (1-2): 1

DCE Bit Rate:
   1) 128 Kb     5) 448 Kb       9) 1344 Kb    13) 3584 Kb
   2) 192 Kb     6) 512 Kb      10) 1536 Kb    14) 4000 Kb
   3) 256 Kb     7) 768 Kb      11) 1792 Kb    15) 5376 Kb
   4) 384 Kb     8) 896 Kb      12) 2688 Kb

Specify the DCE Bit Rate (1-15): 1

TRUNK INFORMATION
 Type: Low Speed Trunk    Slot: 3   Port: 0
 DCE/DTE Type:            DCE
 DCE Bit Rate:            128 (kbps)

Is the port information correct? (Y/N) [Y] Y
```

As with chassis information, if you answer **N** to the port confirmation prompt, you will be prompted to re-enter all the trunk port information, beginning with the "`Trunk Card Type`."

If you answer **Y**, you will be queried if you want to configure an additional trunk, as shown below:

```
Configure additional trunk port information (Y/N)? [N] Y
```

If you respond **Y** to this query, repeat this procedure to configure additional trunk ports.

If you respond **N** to this query, the system responds with the following message:

```
Creating minimum configuration database...done.
A trunk configuration CLI script has been written to /tmp/trunkconfig.cli
```

The message means that the system has created a minimum LS2020 configuration. It also signifies that the system is loading the line cards, starting the LS2020 platform software, and starting the neighborhood discovery process.

At this point, the login prompt appears. You can then continue with Step 7.

Step 7 If you have previously configured trunk port information as part of the basic configuration procedure, you must apply that information to the platform software.

Note To apply trunk port information to the platform software, you must first wait for the line cards (which incorporate the trunk ports you need to configure) to come up. A line card is signaled as being up when the `NDD_3` trap for that card appears on the console, as shown in the example below.

```
(OPER) NDD_3 at 03/05/96 10:56:04 EDT (03/05/96 14:54:04 GMT)
Line Card ls2020:5 (MS-TR) up.
```

Next, log in to the system and start the CLI using the `oper` or `npadmin` account, as shown in the example below:

```
user name: npadmin
password: <password> Return
```

When you log into the `oper` or `npadmin` account, the CLI starts automatically, first presenting the CLI banner on the console and then the CLI prompt, as shown in the example below:

```
cli: (ls_main) compiled Mar 05 1996 @ 03:45:21
Copyright 1996. Cisco Systems, Inc. All Rights Reserved.
cli>
```

When the CLI prompt appears, enter the CLI protected mode, as shown below:

```
cli> protected
Enter Password: <password> Return
*cli>
```

Next, invoke the CLI configuration trunk script using the `source` command, as shown below:

```
*cli> source "/tmp/trunkconfig.cli"
```

This command applies the trunk configuration to the trunk ports you have configured. Note that additional traps may be generated at this time to signal the changes in the status of the trunk ports. Such trap messages are normal.

Step 8 If you are installing a new LS2020 switch with two NPs, return to the earlier section "Connecting the Terminal to the NP." Repeat the configuration procedures from that point to configure the second NP for your LS2020 switch.

Upon completion of the basic configuration procedures for the NP(s) in your LS2020 chassis, continue as described in the following section, "How to Proceed."

How to Proceed

This section describes actions you should take after installing a new LS2020 switch.

Running Diagnostics

To ensure that the newly installed LS2020 switch is working properly, run the hardware diagnostics described in the *LightStream 2020 Hardware Reference & Troubleshooting Guide*.

Starting Maintenance Log

Keep a maintenance log for each LS2020 switch in your network. At a minimum, you should record the following information:

- The node name and its IP address
- Passwords
- The date and description of every maintenance or repair procedure performed on the LS2020 switch, such as replacement of a faulty line card, power tray, and so forth.
- The chassis ID, modem initialization string, and modem password, all of which are stored in EEPROMs on the midplane.

  If the current EEPROMs or the midplane are replaced, you will need to enter the chassis ID and modem information into the EEPROMs on the new midplane. See the *LightStream 2020 Hardware Reference & Troubleshooting Guide* for instructions on finding the chassis ID and modem information.

You are also advised to record any unusual LS2020 behavior. The maintenance log can be highly useful in identifying and correcting chronic or intermittent LS2020 operational problems.

Installing StreamView Network Management Software

You must install the CLI, the StreamView configurator, monitor , and topology map modules , and the private MIB database on the NMS that you will be using to manage your LS2020 network. The chapter "Installing Network Management Software Applications" presents the necessart procedures for installing the network management software.

Setting Up Network Environment

The chapter "Setup Procedures" presents procedures and options that enable you to tailor your network environment to your particular operating requirements. For example, you can enable the security mechanism that prevents unauthorized network access. Also, you can change operational parameters, such as the default SNMP community name(s) and the default trap delivery address(es).

You should read the chapter "Setup Procedures" and perform any applicable procedures therein before activating your LS2020 switch in the network.

Configuring the Network

The StreamView LS2020 configurator is used to create a global configuration database for your LS2020 network and to load appropriate configuration information into each LS2020 switch in the network.

For detailed information about these high-level procedures, see the *LightStream 2020 Configuration Guide.*

Backing Up Distribution Diskettes

By default, LS2020 chassis (platform) software is installed at the factory on the hard disk prior to shipment of the unit to a customer site. However, if you come into possession of distribution diskettes for a new LS2020 software release and you are concerned about how carefully they may be handled and stored, you should back them up before proceeding with any new software installation.

In the following procedures, it is assumed that you have access to a PC running DOS 5.0 (or later) and which supports at least one 1.44 MB floppy disk drive. It is also assumed that you have a supply of at least 15 blank, DOS-formatted 1.44 MB diskettes.

Note Using the **diskcopy /v** command in this procedure, you can verify the correctness of the copy operation. You can also use the **diskcomp** command to verify the copy operation. Refer to your DOS documentation for additional information about these commands. Do not use the **dir** command to display the names of files on the distribution diskettes. There is no FAT (DOS file allocation table) on LS2020 distribution diskettes; thus, there can be no FAT on backup diskettes. If you enter **dir a:** or **dir b:** in an attempt to display distribution diskette files, DOS responds with a read error message.

If Your PC Has Two 1.44-MB Floppy Disk Drives

To back up each LS2020 software distribution diskette, perform the following steps:

Step 1 Insert the first distribution (source) diskette in floppy disk drive A.

Step 2 Insert a blank, formatted (destination) diskette in drive B.

Step 3 Enter the following command at the DOS prompt:

```
C:\> diskcopy a: b: /v
```

Step 4 DOS then copies the data from drive A to the backup diskette in drive B.

Step 5 At the conclusion of the first copy operation, DOS asks if you want to perform an additional copy operation.

Step 6 Press **Y** and insert the next distribution (source) diskette into drive A.

Step 7 Continue copy operations until all the distribution diskettes are backed up.

If Your PC Has One 1.44-MB Floppy Disk Drive

To copy each LS2020 software distribution diskette, perform the following steps:

Step 1 Insert the first distribution (source) diskette into floppy disk drive A. (This procedure assumes that you have configured your floppy disk as drive A.)

Step 2 Enter the following command at the DOS prompt:

```
C:\> diskcopy a: a: /v
```

Step 3 DOS reads the contents of the first source diskette into memory. When DOS prompts you to do so, remove the first distribution diskette and insert a blank, formatted (destination) diskette into floppy drive A.

Step 4 DOS copies the data from memory onto the backup (destination) diskette. When DOS prompts you to do so, remove the first backup diskette and insert the next distribution diskette in the series into floppy disk drive A.

Step 5 Alternate Step 3 and Step 4 in response to DOS prompts until you have copied the entire set of distribution diskettes.